

AMENDMENTS TO THE SPECIFICATION

Insert the following heading before the first full paragraph on page 1:

B3 - FIELD OF THE INVENTION -

Insert the following heading before the second full paragraph on page 1:

B3 - BACKGROUND OF THE INVENTION -

Insert the following heading before the fourth full paragraph on page 1:

B4 - SUMMARY OF THE INVENTION -

Replace the second full paragraph on page 2 with the following:

Thus, although this method of vibrating the tine or tines may be less efficient than the existing arrangements (in which the magnetic fields produced by current in the electromagnets are longitudinal); here they are essentially transverse, resulting in mutual repulsion between the tines even in the absence of any other magnetically active material. Preferably the tines are vibrated at the resonant frequency of the tuning fork. With this configuration, both winding strength and packing density of the coil can be maximized by eliminating the need for windings between the tines. The winding is external to the fork

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and preferably extends over nearly the entire length of the fork, contributing to driving force through induced magnetism even in the base region where the tines are joined. This arrangement therefore allows the largest winding volume, though the winding strength is reduced owing to the larger diameter of the turns compared with the localised windings of the existing designs. However this is compensated by the large cross section available for the winding. At any point along the entire length of the fork the (typically coaxial) winding of the coil contributes to the driving force, even the region beyond the base of the tuning fork.

Replace the third full paragraph on page 4 with the following:

Preferably said sensor is a piezoelectric piezoelectric sensor, a fibre sensor system, a hall effect sensor or a series capacitive sensor.

Insert the following heading after the seventh full paragraph on page 5:

BRIEF DESCRIPTION OF THE DRAWINGS

Insert the following heading before the first full paragraph on page 7:

DETAILED DESCRIPTION OF THE INVENTION

Replace the second full paragraph on page 13 with the following:

Initially two steel or brass strips of 1 mm × 0.5 mm × 35 mm long were inserted into a heat shrink (preferably of the correct size so that it does not have to be pre-shrunk, as this makes it easier to remove at the end), to act as a former during the manufacture of the coil. If the heat shrink is a little loose, it should be gently heated until the heat shrink is firm.

Replace the first full paragraph on page 14 with the following:

Once the three layers of windings are complete, the loose end of the wire should be taped to the other end of the former. A small amount of 5 minute epoxy was used to glue the coil area and ensure that all parts are covered. Once the epoxy has reached the tacky stage, the tape holding the ends of the copper wire were removed, and the epoxy ~~epoxy~~ allowed to harden.

Replace the paragraph bridging pages 14 and 15 with the following:

A piezoelectric piezoelectric film sensor could be employed, as it has a thickness of only about 0.2 mm, which could be incorporated onto the bottom of the tuning fork. The addition of the film could detune the tine that the film is attached to. Alternatively, a fibre sensor system could be used, comprising two optical fibres, one carrying the laser

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light and the other returning the signal. The light from the laser is beamed onto one of the tines (preferably polished to increase the light reflected); the amount of light returned via the second fibre varies according to the angle of the tine. The feedback fibre would be directed at a photodiode which converts the light intensity to an analogue signal.
